

**X(3823)** $I^G(J^{PC}) = ??(?^-)$ 

## OMITTED FROM SUMMARY TABLE

Seen by BHARDWAJ 13 in  $B \rightarrow \chi_{c1}\gamma K$  decays as a narrow peak in the invariant mass distribution of the  $\chi_{c1}\gamma$  system. Properties consistent with the  $\psi_2(1^3D_2) c\bar{c}$  state.

NODE=M212

| <b>X(3823) MASS</b>   |             |             |         |                                   |  |
|-----------------------|-------------|-------------|---------|-----------------------------------|--|
| VALUE (MeV)           | EVTS        | DOCUMENT ID | TECN    | COMMENT                           |  |
| <b>3823.1±1.8±0.7</b> | $33 \pm 10$ | 1 BHARDWAJ  | 13 BELL | $B \rightarrow \chi_{c1}\gamma K$ |  |

<sup>1</sup> From a simultaneous fit to  $B^\pm \rightarrow (\chi_{c1}\gamma)K^\pm$  and  $B^0 \rightarrow (\chi_{c1}\gamma)K_S^0$  with significance  $4.0\sigma$  including systematics. Corrected for the measured  $\psi(2S)$  mass using  $B \rightarrow \psi(2S)K \rightarrow (\gamma\chi_{c1})K$  decays.

NODE=M212M

NODE=M212M

NODE=M212M;LINKAGE=A

| <b>X(3823) WIDTH</b> |     |             |         |                                   |  |
|----------------------|-----|-------------|---------|-----------------------------------|--|
| VALUE (MeV)          | CL% | DOCUMENT ID | TECN    | COMMENT                           |  |
| <b>&lt;24</b>        | 90  | 1 BHARDWAJ  | 13 BELL | $B \rightarrow \chi_{c1}\gamma K$ |  |

<sup>1</sup> From a simultaneous fit to  $B^\pm \rightarrow (\chi_{c1}\gamma)K^\pm$  and  $B^0 \rightarrow (\chi_{c1}\gamma)K_S^0$  with significance  $4.0\sigma$  including systematics.

NODE=M212W

NODE=M212W

NODE=M212W;LINKAGE=A

| <b>X(3823) DECAY MODES</b> |                                |  |  |  |  |
|----------------------------|--------------------------------|--|--|--|--|
| Mode                       | Fraction ( $\Gamma_i/\Gamma$ ) |  |  |  |  |
| $\Gamma_1 \chi_{c1}\gamma$ | seen                           |  |  |  |  |
| $\Gamma_2 \chi_{c2}\gamma$ | not seen                       |  |  |  |  |

NODE=M212215;NODE=M212

| <b>X(3823) BRANCHING RATIOS</b>                 |                   |             |         |                                       |  |
|---|-------------------|-------------|---------|---------------------------------------|--|
| $\Gamma(\chi_{c1}\gamma)/\Gamma_{\text{total}}$ | $\Gamma_1/\Gamma$ |             |         |                                       |  |
| VALUE   | EVTS              | DOCUMENT ID | TECN    | COMMENT                               |  |
| <b>seen</b>                                     | $33 \pm 10$       | 1 BHARDWAJ  | 13 BELL | $B^+ \rightarrow \chi_{c1}\gamma K^+$ |  |

<sup>1</sup> Reported  $B(B^\pm \rightarrow X(3823)K^\pm) \times B(X(3823) \rightarrow \gamma\chi_{c1}) = (9.7 \pm 2.8 \pm 1.1) \times 10^{-6}$  with statistical significance  $3.8\sigma$ .

DESIG=1

DESIG=2

NODE=M212225

NODE=M212R01  
NODE=M212R01

NODE=M212R01;LINKAGE=A

| <b><math>\Gamma(\chi_{c2}\gamma)/\Gamma_{\text{total}}</math></b> |                   |             |      |         |  |
|---|-------------------|-------------|------|---------|--|
| VALUE   | $\Gamma_2/\Gamma$ |             |      |         |  |
| not seen  | 1                 | DOCUMENT ID | TECN | COMMENT |  |
| $B^+ \rightarrow \chi_{c2}\gamma K^+$                             |                   |             |      |         |  |

<sup>1</sup> Reported  $B(B^\pm \rightarrow X(3823)K^\pm) \times B(X(3823) \rightarrow \gamma\chi_{c2}) < 3.6 \times 10^{-6}$  at 90% CL.

NODE=M212R02  
NODE=M212R02

NODE=M212R02;LINKAGE=A

| <b><math>\Gamma(\chi_{c2}\gamma)/\Gamma(\chi_{c1}\gamma)</math></b> |                     |             |      |         |  |
|---|---------------------|-------------|------|---------|--|
| VALUE   | $\Gamma_2/\Gamma_1$ |             |      |         |  |
| <0.41   | 90                  | DOCUMENT ID | TECN | COMMENT |  |
| $B^+ \rightarrow \chi_{c1}/\chi_{c2}\gamma K^+$                     |                     |             |      |         |  |

NODE=M212R03  
NODE=M212R03**X(3823) REFERENCES**BHARDWAJ 13 PRL 111 032001 V. Bhardwaj *et al.* (BELLE Collab.)

NODE=M212

REFID=55412